We claim:

1. A random copolymer of propylene with other 1-alkenes having up to 10 carbon atoms,

whose content of comonomers is in the range from 0.7 to 1.4% by weight if the only comonomer present in the propylene copolymers is ethylene, or

whose content of comonomers is in the range from 0.7 to 3.0% by weight if at least one C_4-C_{10}-1-alkene is present as comonomer, and

whose cold-xylene-soluble fraction is from 1.0 to 2.5% by weight if ethylene is present as a comonomer in the propylene copolymers, or

whose cold-xylene-soluble fraction is from 0.75 to 2.0% by weight if the only comonomers present are C_4-C_{10}-1-alkenes.

2. A random propylene copolymer as claimed in claim 1 which comprises exclusively ethylene as comonomer.

3. A random propylene copolymer as claimed in claim 1, which comprises 1-butene as comonomer.

4. A random propylene copolymer as claimed in claim 1, whose Q_5 value is greater than or equal to 200, where Q_5 is given by

$$Q_5 = 1000 \times \frac{\mu(T_m)}{\mu(T_m-5K)}$$

and

$\mu(T_m)$ is the elongational viscosity of the random propylene copolymer at the lowest temperature at which the copolymer is fully molten, and $\mu(T_m-5K)$ is the elongational viscosity at a temperature which is lower by 5K, and the elongational viscosities are determined 2 seconds after stretching begins at a constant strain rate (Hencky strain rate) $\dot{\varepsilon}$ of 0.2 s^{-1}.

5. A random propylene copolymer as claimed in claim 1, whose PI (Processability Index) is greater than 18, where the PI is determined from the formula

$$PI = \ln(SH + 1)\cdot(\ln Q_3 + \ln Q_5),$$

Q_5 is given by

$$Q_5 = 1000 \times \frac{\mu(T_m)}{\mu(T_m-5K)}$$

and Q_3 is given by

$$Q_3 = 1000 \times \frac{\mu(T_m)}{\mu(T_m-3K)},$$

$\mu(T_m)$ is the elongational viscosity at the lowest temperature at which the copolymer is fully molten, $\mu(T_m-5K)$ is the elongational viscosity at a temperature which is lower by 5K and $\mu(T_m-3K)$ is the elongational viscosity at a temperature which is lower by 3K, and the elongational viscosities are determined 2 seconds after stretching begins at a constant strain rate (Hencky strain rate) $\dot{\varepsilon}$ of 0.2 s^{-1},

and the factor SH (Strain Hardening) is the ratio of the maximum gradient of the curve of elongational viscosity plotted against time on a double logarithmic scale for temperatures less than T_m-5K to the gradient of the elongational viscosity curve 1 second after stretching begins at a constant Hencky strain rate $\dot{\varepsilon}$ of 0.2 s^{-1} at a temperature of T_m-5K.

6. A process for preparing random propylene copolymers as claimed in claim 1, in which propylene is polymerized with other 1-alkenes having up to 10 carbon atoms from the gas phase at from 50 to 100°C and at a pressure of 15 to 40 bar in the presence of a Ziegler-Natta catalyst system comprising

a) a titanium-containing solid component comprising at least one halogen-containing magnesium compound and an electron donor,

b) an aluminum compound and

c) at least one other electron-donor compound,

and the ratio of the partial pressures of propylene and of the comonomers is adjusted to from 400:1 to 15:1 and the molar ratio of the aluminum compound b) and the other electron-donor compound c) is adjusted to from 20:1 to 2:1.

7. A method of using the random propylene copolymers as claimed in claim 1 for producing films, fibers or moldings.

8. A film, a fiber or a molding comprising random propylene copolymers as claimed in claim 1.

9. A biaxially stretched film made from random propylene copolymers as claimed in claim 1 and having a stretching ratio of at least 4:1 in the longitudinal direction and of at least 5:1 in the transverse direction.

10. A process for producing biaxially stretched polypropylene copolymer films in which random propylene copolymers as claimed in claim 1 are melt-extruded through a die to give a film, the extruded film is cooled to from 100 to 20°C so that it solidifies, the solidified film is stretched in the longitudinal direction at from 80 to 150°C with a stretching ratio of at least 4:1 and in the transverse direction at from 120 to 170°C with a stretching ratio of at least 5:1.